

# **Historical Metadata on the NWS Legacy Radiosonde Network**

## **Attachment A**

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National Weather Service/Office of Operational Systems  
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## 1.0 Introduction

In the U.S., routine radiosonde observations began in the 1940s. Prior to that, upper air observations were conducted using kites, tethered balloons, and aircraft during the 1920s and 1930s. During the early 1940s, thermistors (resistors with a resistance that varies with temperature) were introduced in order to replace glass tube type thermometers, with lithium chloride humidity elements introduced in order to replace hair hygrometers. Some significant changes were made to the radiosondes flown by the U.S. Weather Bureau between 1948 and 1950. In 1948, relative humidity values were computed using saturation values with respect to water for all temperatures. Prior to 1948, relative humidity was computed using saturation values with respect to ice for temperatures below 0°C. In 1949, the size of the temperature element was reduced in order to decrease the instrument's response time. In 1950, corrections were made to temperature measurements made between 400 and 10 hPa for daytime soundings whenever the solar elevation angle was greater than or equal to -2.5°. These corrections were made in order to adjust for the effects of solar radiation on the instrument.

In the 1957, the upper air observation times became 00 and 12 UTC. Prior to 1957, the observation times were 03 and 15 UTC. In 1958, the VIZ type "A" radiosonde was introduced to the upper air network. The VIZ "A" would be the workhorse radiosonde of the network for the next 32 years. Beginning in 1960, a white coating was applied to the temperature element. This eliminated the need to apply a solar correction to high altitude upper air data collected during daytime flights. As a result, the solar corrections that were applied beginning 1950 were discontinued. In 1965, the carbon humidity element was introduced. The introduction of the carbon element allowed for reporting of low relative humidity values. Earlier practice with the lithium chloride sensor was not to report low values due to poor sensor performance.

From the late 1960s through the mid 1980s, the changes to the radiosondes used in the upper air network were minimal. However, there were a few noteworthy occurrences. For example, in 1969, upper air calculations were performed by computer. Prior to 1969, upper air data calculations were completely manual. Transition from manual computations to computer based computations improved the consistency of the calculations and reduced error. In 1973, relative humidity values that ranged from 0 to 19 percent were reported as 19 percent.

There are 4 types of radiosondes that are considered VIZ-type radiosondes. In 1988, the VIZ "B" radiosonde was introduced. This was intended to replace the VIZ "A" as the primary radiosonde used through the network. In 1989, the last VIZ "A" radiosonde was flown operationally. The VIZ B2, introduced in 1997, the Sippican Microsonde MarkII (LORAN)1995, and Sippican Microsonde Mark IIA (GPS) in 2005. Prior to 1988 the VIZ radiosondes were exclusively used by NWS and since 1999 VIZ-type radiosondes have been manufactured by Sippican.

Significant changes were made to the upper air data processing software in 1991. The most noteworthy is the inclusion of 925 hPa as a mandatory level. Other changes include 20%/-40°C humidity cutoffs and a changing of the gravity constant as per WMO recommendation; the

## VIZ

Major chronological changes to VIZ radiosondes manufactured for the National Weather Service in support of the legacy network dating back to the late 1950s are included in Table 1. While the major interest of the Data Continuity Study is related to the “Large Rod Thermistor,” other changes in the radiosonde design are noted which could have bearing on the measurements.

| <b>Year</b> | <b>Major chronological Changes to VIZ Radiosondes used by the NWS</b>               |
|-------------|---|
| 1943        | Ceramic temperature element and lithium chloride humidity element introduced        |
| 1944        |   |
| 1945        |   |
| 1946        |   |
| 1947        |   |
| 1948        | Began computing all RH wrt water. Prior calculations were wrt ice below 0°C         |
| 1949        | Smaller ceramic temperature element introduced to decrease response time            |
| 1950        | Solar corrections for data between 400 and 10 hPa for solar angles $\geq$ than 2.5° |
| 1951        |   |
| 1952        |   |
| 1953        |   |
| 1954        |   |
| 1955        |   |
| 1956        |   |
| 1957        | Changed observation time from 03 and 15 UTC to 00 and 12 UTC                        |
| 1958        | Introduced VIZ “A” radiosonde   |
| 1959        |   |
| 1960        | White coated and outrigger thermistors implemented, solar corrections discontinued  |
| 1961        |   |
| 1962        |   |
| 1963        |   |
| 1964        |   |
| 1965        | Carbon RH element replaced lithium chloride RH element—began reporting low RH       |
| 1966        |   |
| 1967        |   |
| 1968        |   |
| 1969        | Upper air data calculations transition from manual to computer computation          |
| 1970        |   |
| 1971        |   |
| 1972        |   |
| 1973        | Began reporting all measured RH values less than 20 percent as 19 percent           |
| 1974        |   |
| 1975        |   |
| 1976        |   |
| 1977        |   |
| 1978        |   |
| 1979        |   |
| 1980        | Introduced Accu-Lok carbon Hygristors to VIZ radiosondes                            |

|      |  |
|------|--|
| 1981 |  |
| 1982 |  |
| 1983 |  |
| 1984 |  |
| 1985 |  |
| 1986 |  |
| 1987 |  |
| 1988 | Introduced VIZ “B” radiosondes to replace VIZ “A” radiosondes  |
| 1989 | Last Use of VIZ “A” radiosondes  |
| 1990 |  |
| 1991 | Major modifications made to the upper air data processing software:<br>+Inclusion of 925 hPa standard level<br>+elimination of 20 % RH and -40°C dewpoint cutoffs<br>+changing gravity constant to 9.80665 |
| 1992 |  |
| 1993 |  |
| 1994 |  |
| 1995 | Introduced Vaisala RS80 and Sippican Mark II Loran to select stations in the network   |
| 1996 |  |
| 1997 | VIZ “B2” introduced capacitive aneroid pressure capsule  |
| 1998 |  |
| 1999 | VIZ type radiosondes now manufactured by Sippican  |
| 2000 |  |
| 2001 |  |
| 2002 |  |
| 2003 | Temperature sensor changed from rod type to chip type on Sippican Mark II (Loran)  |
| 2004 |  |
| 2005 | Introduced Sippican Mark IIA (GPS) to select stations in the network   |
| 2006 |  |
| 2007 |  |
| 2008 |  |
| 2009 |  |
| 2010 |  |
| 2011 |  |
| 2012 |  |

**Table 1. VIZ Large Rod Thermistor Legacy Radiosonde Evolution for NWS Support**

## 2.0 Data Continuity Site Historical Metadata

### 2.1 Tiyan, Guam (PGUM)

#### 2.1.1 Station Description

The Guam Upper Air Station (WMO 91212, WBAN 41406) is located at latitude 13°28'39" North, longitude 144° 47'40" East at an elevation of 75.4 meters above mean sea level and is on the southern edge of AB Won Pat International. The station is located on a plateau in the central section of the island of Guam. The Guam Upper Air Station has been making routine rawinsonde observations since 1986.



Figure 1. Map of Guam Upper Air Station

#### 2.1.2 Radiosondes Flown at Guam since 1988

The VIZ B radiosonde was flown from October 1988 through October of 1998, except for a 23-month period from November 1995 through September 1997 when the Microsonde MKII radiosonde with the rod-type temperature sensor was flown. From November 1998 through the present, the VIZ B2 has been flown at Guam. The timeline below illustrates the time periods in which each radiosonde was flown. Radiosondes flown prior to 1988 were undoubtedly the VIZ A sonde.

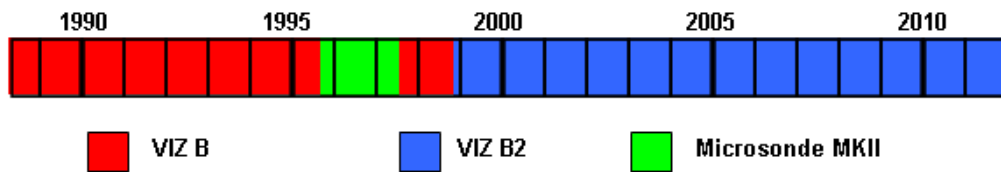


Figure 2. Timeline of radiosondes flown at Guam since 1988

### 2.1.3 Guam Upper Air Station Moves

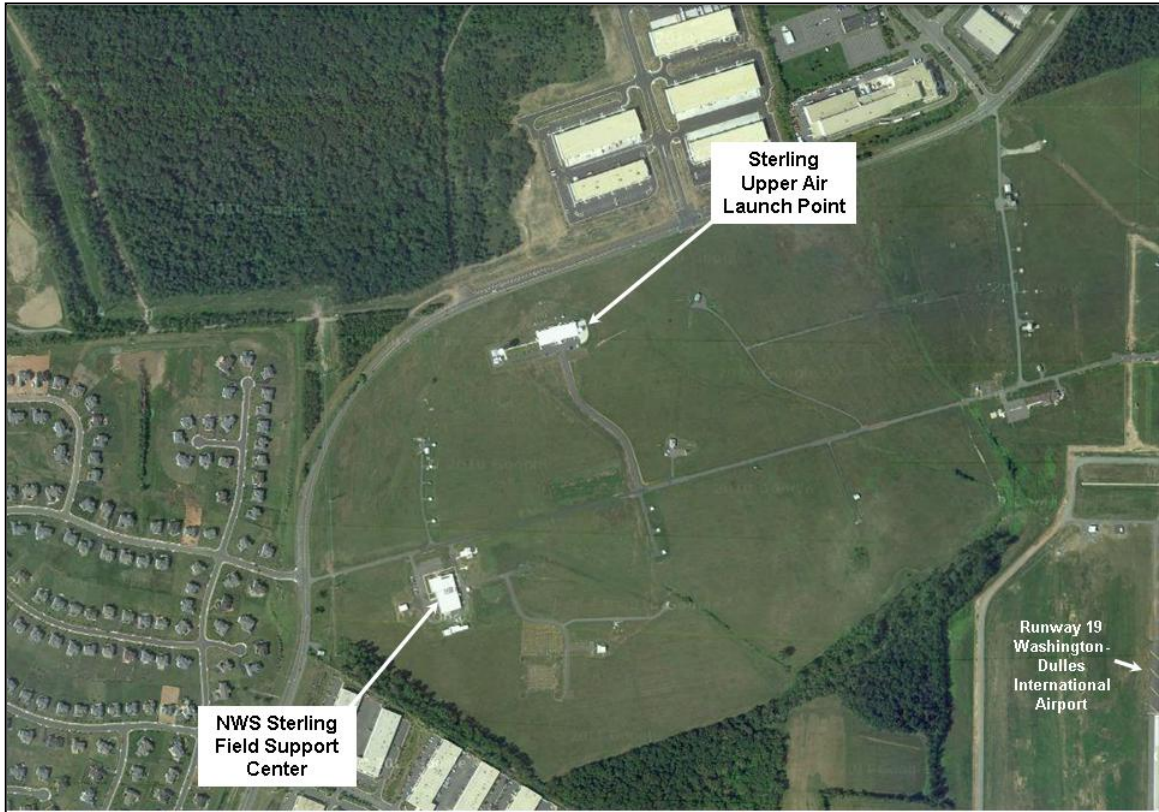
The Guam Upper Air Station was moved from the old site under WMO ID 91217 to WMO ID 91212 on March 1, 1999. The old latitude was 13.55N and 144.83 E from a station elevation of 111 meters. The Guam Upper Air Station was moved southwest by 900 meters in April 2000 from latitude 13°28'59" North, longitude 144° 48'00" East to the site's present location. The relocation yielded a drop in station elevation of 2 meters from 77.4 meters.

## 2.2 Sterling (KLWX)

### 2.2.1 Station Description

The Sterling Upper Air Station (WMO 72403, WBAN 93734) is located at latitude 38° 58' 36" North, longitude 77° 29' 09" East at an elevation of 88.4 meters above mean sea level and is on the northwestern corner of Washington-Dulles International Airport. The Sterling Upper Air Station has been making routine rawinsonde observations since 1949.





**Figure 3. Map of Sterling Field Support Center**



### 2.2.2 Radiosondes Flown at Sterling since 1988

The VIZ B radiosonde was flown from September 1988 through October of 1995. From November 1995 through July 2005, the Sterling Upper Air Station launched the Vaisala RS80 radiosonde. From August 2005 through the present, the Microsonde MKIIA GPS equipped radiosonde has been flown at Sterling. The timeline below illustrates the time periods in which each radiosonde was flown.

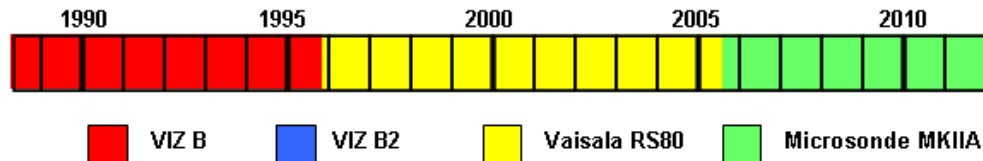


Figure 4. Timeline of radiosondes flown at Sterling since 1988

### 2.2.3 Sterling Upper Air Station Moves

Need move info.....10/2007, 9/2008...others...

## 2.3 Caribou (KCAR)

### 2.3.1 Station Description

The Caribou Upper Air Station (WMO 72712, WBAN 14607) is located at latitude 46° 52' 06" North, longitude 68° 00' 49" East at an elevation of 190.5 meters above mean sea level and is on the southeastern corner of Caribou Municipal Airport. The site is on a ridge in rolling country. The immediate area is suburban with the city to the south and east. The Caribou Upper Air Station has been making routine rawinsonde observations since 1946.



Figure 5. Map of Caribou Upper Air Station

### 2.3.2 Radiosondes Flown at Caribou since 1988

The VIZ B radiosonde was flown from October 1988 through May of 1997. From June 1997 through the present, the VIZ B2 has been flown at Caribou. The timeline below illustrates the time periods in which each radiosonde was flown. Prior to 1988 the VIZ A sonde was flown

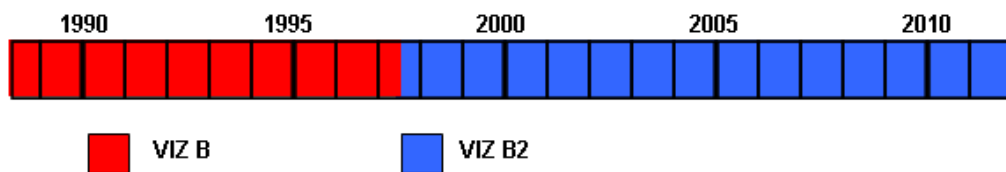


Figure 6. Timeline of radiosondes flown at Caribou since 1988

## 2.4 Barrow (PABR)

### 2.4.1 Station Description

The Barrow Upper Air station (WMO 70026, WBAN 27502) is located at latitude 71° 17'21" North, longitude 156° 47'06" W at an elevation of 11.9 meters above mean sea level and is 400 meters northeast of the end of approach runway 06 of Wiley Post-Will Roger Memorial Airport. Barrow is located on level tundra on a point of land extending into the Arctic Ocean. Open water is found to the east, west and north with tundra extending 300 miles south. The Barrow Upper Air Station has been making routine rawinsonde observations since 19XX.



Figure 7. Map of Barrow Upper Air Launch Point

### 2.4.2 Radiosondes Flown at Barrow since 1988

The VIZ B radiosonde was flown for over ten years from October 1988 through November of 1998, except for a two month period during August and September 1998 when the VIZ B2 radiosonde was flown. From December 1998 through the present, the VIZ B2 has been flown at Barrow. The timeline below illustrates the time periods in which each radiosonde was flown.

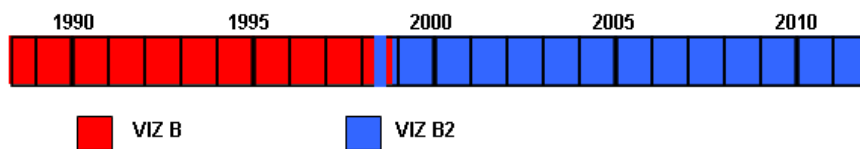


Figure 8. Timeline of radiosondes flown at Barrow since 1988

### 3.0 Station Histories of Radiosonde Replacement System Data Continuity Stations

#### 3.1 Sterling, Virginia KLWX

|                                   |       |         |          |    |                 |   |  |         |
|-----------------------------------|-------|---------|----------|----|-----------------|---|--|---------|
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1949 07 99 99 0 | USING GROUND EQUIP.SCR-584 RADAR  | Schwartz & Govett (1992)CALL LETTERS AND WBAN NUMBER: ADW 13705  | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1962 01 99 99 0 | CHANGE GROUND EQUIP AN/GMD-1A to WBRT-60  | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: IAD 93734 | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1965 03 99 99 0 | CHANGE RH SENSOR LITHIUM CHLORIDE HYGRISTOR to CARBON HYGRISTOR                           | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: IAD 93734 | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1972 02 99 99 0 | CHANGE RH DUCT DUCT to REDESIGNED DUCT  | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: IAD 93734 | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1974 04 99 99 0 | CHANGE COMPUTER TIME SHARE COMPUTER to MINI-COMPUTER                                      | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: IAD 93734 | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1980 12 99 99 0 | CHANGE RH SENSOR CARBON HYGRISTOR to NEW CARBON HYGRISTOR                                 | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: IAD 93734 | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1981 07 99 99 0 | CHANGE SONDE MODEL VIZ TRANSPONDER UNSPECIFIED to VIZ ACCU-LOK UNSPECIFIED                | Schwartz & Govett (1992) ICAO AND WBAN NUMBER: IAD 93734         | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1982 99 99 99 1 | USING RADIAT. CORR. R1 NO RADIATION CORRECTION  | UK Met. O. (pers. comm.) Derived from WMO (1982)                 | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1982 99 99 99 1 | USING SONDE MODEL I1 VIZ MK I MICROSONDE OMEGA UNSPECIFIED                                | UK Met. O. (pers. comm.) Derived from WMO (1982)                 | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1986 09 99 99 0 | CHANGE COMPUTER MINI-COMPUTER to MINI-ART 2 SYSTEM  | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: IAD 93734 | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1986 99 99 99 1 | USING RADIAT. CORR. R1 NO RADIATION CORRECTION  | UK Met. O. (pers. comm.) Derived from D MET O 1/6/1/15           | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1986 99 99 99 1 | USING SONDE MODEL I1 VIZ MK I MICROSONDE OMEGA UNSPECIFIED                                | UK Met. O. (pers. comm.) Derived from D MET O 1/6/1/15           | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1988 09 01 99 0 | CHANGE SONDE MODEL VIZ ACCU-LOK UNSPECIFIED to VIZ B 1492-520 NWS 1680MHZ                 | Schwartz & Govett (1992) CALL LETTERS & WBAN NUMBER:IAD 93734    | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1989 12 99 99 0 | CHANGE COMPUTER MINI-ART 2 SYSTEM ? to MICRO-ART SYSTEM VERSION UNSPECIFIED               | NOAA NWS   | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1993 10 99 99 0 | CHANGE DATA CUTOFF MISC. ALGORITHM to CORRECTED ALGORITHM                                 | NOAA NWS VIZ RH ALGORITHM CHANGED to REDUCE LOW BIAS AT HIGH RH. | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1993 10 99 99 0 | CHANGE GRAVITY VAL. 9.8 METERS PER SECOND SQUARED to 9.80665 METERS PER SECOND SQUARED    | NOAA NWS   | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1993 10 99 99 0 | CHANGE RH ALGORITHM DEW POINT DEPRESSION = 30 C IF RH < 20% to NO CUTOFFS                 | NOAA NWS   | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1993 10 99 99 0 | CHANGE RH ALGORITHM RH MISSING FOR T<-40 to NO CUTOFFS                                    | NOAA NWS   | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1995 11 01 99 0 | CHANGE SONDE MODEL VIZ B 1492-520 NWS 1680 MHZ to VAISALA RS80-56H NWS SOLAR/IR CORR      | NOAA NWS   | 99/1996 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4670 | 85 | 1999 02 01 99 0 | CHANGE COMPUTER MICRO-ART SYSTEM VERSION UNSPECIFIED to MICRO-ART SYSTEM VERSION 2.97     | NOAA NWS Temps < -90 C now recorded                              | 11/2004 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9833 | -77.4833 | 86 | 2001 09 23 99 0 | STATION MOVED   | NOAA NWS   | 01/2006 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4833 | 86 | 2005 08 01 99 0 | CHANGE SONDE MODEL VAISALA RS80-67 1680 MHZ FM to SIPPICAN 1649-540 LMS5 1680 GPS NWS RRS | NOAA NWS   | 01/2006 |
| 72403 72403 STERLING(WASH DULLES) | VA US | 38.9830 | -77.4833 | 88 | 2008 09 19 99 0 | STATION MOVED   | Updated by NCAR/EOL  | 06/2010 |

Table 2. Sterling, Virginia Station History

#### 3.2 Caribou, Maine

|                           |         |          |     |                 |  |  |         |
|---------------------------|---------|----------|-----|-----------------|--|--|---------|
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 192 | 1946 07 99 99 0 | CHANGE GROUND EQUIP RADIO RECEIVER 72.2 MHZ to SCR-658 OR METOX RDF          | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: CAR 14607 | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1955 08 99 99 0 | CHANGE GROUND EQUIP SCR-658 OR METOX RADIO DIRECTION FINDER to AN/GMD-1A     | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: CAR 14607 | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1965 06 99 99 0 | CHANGE RH SENSOR LITHIUM CHLORIDE HYGRISTOR to CARBON HYGRISTOR              | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: CAR 14607 | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1965 10 99 99 0 | CHANGE SONDE MODEL VIZ HYPSONETER UNSPECIFIED to VIZ TRANSPONDER UNSPECIFIED | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: CAR 14607 | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1967 12 99 99 0 | CHANGE SONDE MODEL VIZ TRANSPONDER UNSPECIFIED to VIZ HYPSONETER UNSPECIFIED | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: CAR 14607 | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1972 02 99 99 0 | CHANGE RH DUCT DUCT to REDESIGNED DUCT                                       | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: CAR 14607 | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1974 08 99 99 0 | CHANGE COMPUTER TIME SHARE COMPUTER to MINI-COMPUTER                         | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: CAR 14607 | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1981 09 99 99 0 | CHANGE RH SENSOR CARBON HYGRISTOR to NEW CARBON HYGRISTOR                    | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: CAR 14607 | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1982 99 99 99 1 | USING RADIAT. CORR. R1 NO RADIATION CORRECTION                               | UK Met. O. (pers. comm.) Derived from WMO (1982)                 | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1982 99 99 99 1 | USING SONDE MODEL I1 VIZ MK I MICROSONDE OMEGA UNSPECIFIED                   | UK Met. O. (pers. comm.) Derived from WMO (1982)                 | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1984 05 99 99 0 | CHANGE COMPUTER MINI-COMPUTER to ART AUTOMATIC RADIO-THEODOLITE SYSTEM       | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: CAR 14607 | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1986 08 99 99 0 | CHANGE COMPUTER ART AUTOMATIC RADIO-THEODOLITE SYSTEM to MINI-ART 2 SYSTEM   | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: CAR 14607 | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1986 99 99 99 1 | USING RADIAT. CORR. R1 NO RADIATION CORRECTION                               | UK Met. O. (pers. comm.) Derived from D MET O 1/6/1/15           | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1986 99 99 99 1 | USING SONDE MODEL I1 VIZ MK I MICROSONDE OMEGA UNSPECIFIED                   | UK Met. O. (pers. comm.) Derived from D MET O 1/6/1/15           | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1988 10 20 99 0 | CHANGE SONDE MODEL VIZ HYPSONETER UNSPECIFIED to VIZ B 1492-520 NWS 1680 MHZ | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: CAR 14607 | 99/1996 |
| 72712 72712 CARIBOU ME US | 46.8670 | -68.0170 | 191 | 1989 99 99 99 1 | USING SONDE MODEL I1 VIZ UNSPECIFIED   | UK Met. O. (pers. comm.) Derived from KITCHEN (1988)             | 99/1996 |

|                                |         |          |     |                   |                     |  |                     |   |
|--------------------------------|---------|----------|-----|-------------------|---------------------|--|---------------------|---|
| 72712 72712 CARIBOU ME US      | 46.8670 | -68.0170 | 191 | 1990 03 99 99 0   | CHANGE COMPUTER     | MINI-ART 2 SYSTEM ? to MICRO-ART SYSTEM VERSION UNSPECIFIED          | NOAA NWS            | 99/1996   |
| 72712 72712 CARIBOU/MUN. ME US | 46.8700 | -68.0200 | 190 | ? 1992 12 99 99 0 | USING SONDE MODEL   | I1 VIZ UNSPECIFIED   | Oakley (1993)       | 99/1996   |
| 72712 72712 CARIBOU ME US      | 46.8670 | -68.0170 | 191 | 1993 10 99 99 0   | CHANGE DATA CUTOFF  | MISC. ALGORITHM to CORRECTED ALGORITHM                               | NOAA NWS            | VIZ RH ALGORITHM CHANGED to REDUCE LOW BIAS AT HIGH RH. 99/1996 |
| 72712 72712 CARIBOU ME US      | 46.8670 | -68.0170 | 191 | 1993 10 99 99 0   | CHANGE GRAVITY VAL. | 9.8 METERS PER SECOND SQUARED to 9.80665 METERS PER SECOND SQUARED   | NOAA NWS            | 99/1996   |
| 72712 72712 CARIBOU ME US      | 46.8670 | -68.0170 | 191 | 1993 10 99 99 0   | CHANGE RH ALGORITHM | DEW POINT DEPRESSION = 30 C IF RH < 20% to NO CUTOFFS                | NOAA NWS            | 99/1996   |
| 72712 72712 CARIBOU ME US      | 46.8670 | -68.0170 | 191 | 1993 10 99 99 0   | CHANGE RH ALGORITHM | RH MISSING FOR T<-40 to NO CUTOFFS                                   | NOAA NWS            | 99/1996   |
| 72712 72712 CARIBOU ME US      | 46.8670 | -68.0170 | 191 | 1997 06 01 99 0   | CHANGE SONDE MODEL  | VIZ B 1492-520 NWS 1680 MHZ to VIZ/SIPPICAN B2 1492-540 NWS 1680 MHZ | Updated by NCAR/EOL | 06/2010   |

**Table 3. Caribou, Maine Station History**

### 3.3 Barrow, Alaska

|                          |         |           |    |                 |                     |   |  |   |
|--------------------------|---------|-----------|----|-----------------|---------------------|---|--|---|
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 8  | 1959 11 99 99 0 | CHANGE GROUND EQUIP | SCR-658 OR METOX RDF to WBRT-57                                       | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: BRW 27502 | 99/1996   |
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 8  | 1963 05 99 99 0 | CHANGE RH SENSOR    | LITHIUM CHLORIDE HYGRISTOR to CARBON HYGRISTOR                        | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: BRW 27502 | 99/1996   |
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 8  | 1972 04 99 99 0 | CHANGE RH DUCT      | DUCT to REDESIGNED DUCT   | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: BRW 27502 | 99/1996   |
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 12 | 1986 09 99 99 0 | CHANGE COMPUTER     | MINI-COMPUTER to MINI-ART 2 SYSTEM                                    | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: BRW 27502 | 99/1996   |
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 12 | 1988 10 01 99 0 | CHANGE SONDE MODEL  | VIZ ACCU-LOK UNSPECIFIED to VIZ B 1492-520 NWS 1680 MHZ               | Schwartz & Govett (1992) CALL LETTERS AND WBAN NUMBER: BRW 27502 | 10/2004   |
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 12 | 1989 11 99 99 0 | CHANGE COMPUTER     | MINI-ART 2 SYSTEM ? to MICRO-ART SYSTEM VERSION UNSPECIFIED           | NOAA NWS   | 99/1996   |
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 12 | 1993 10 99 99 0 | CHANGE DATA CUTOFF  | MISC. ALGORITHM to CORRECTED ALGORITHM                                | NOAA NWS   | VIZ RH ALGORITHM CHANGED to REDUCE LOW BIAS AT HIGH RH. 99/1996 |
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 12 | 1993 10 99 99 0 | CHANGE GRAVITY VAL. | 9.8 METERS PER SECOND SQUARED to 9.80665 METERS PER SECOND SQUARED    | NOAA NWS   | 99/1996   |
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 12 | 1993 10 99 99 0 | CHANGE RH ALGORITHM | DEW POINT DEPRESSION = 30 C IF RH < 20% to NO CUTOFFS                 | NOAA NWS   | 99/1996   |
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 12 | 1993 10 99 99 0 | CHANGE RH ALGORITHM | RH MISSING FOR T<-40 to NO CUTOFFS                                    | NOAA NWS   | 99/1996   |
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 12 | 1998 08 09 99 0 | CHANGE SONDE MODEL  | VIZ B 1492-520 NWS 1680 MHZ to VIZ/SIPPICAN B2 1492-540 NWS 1680 MHZ  | Updated by NCAR/EOL  | 06/2010   |
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 12 | 1998 10 05 99 0 | CHANGE SONDE MODEL  | VIZ/SIPPICAN B2 1492-540 NWS 1680 MHZ to VIZ B1492-520 NWS 1680 MHZ   | Updated by NCAR/EOL  | 06/2010   |
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 12 | 1998 12 04 99 0 | CHANGE SONDE MODEL  | VIZ B 1492-520 NWS 1680 MHZ to VIZ/SIPPICAN B2 1492-540 NWS 1680 MHZ  | Updated by NCAR/EOL  | 06/2010   |
| 70026 70026 BARROW AK US | 71.3000 | -156.7800 | 12 | 1999 02 01 99 0 | CHANGE COMPUTER     | MICRO-ART SYSTEM VERSION UNSPECIFIED to MICRO-ART SYSTEM VERSION 2.97 | Hammer (pers. comm.) temps. <-90 C now recorded                  | 10/2004   |

**Table 4. Barrow, Alaska Station History**

### 3.4 Guam

|                            |         |          |          |                 |                    |  |  |   |
|----------------------------|---------|----------|----------|-----------------|--------------------|--|--|---|
| 91212 91217 GUAM/TAGUAC GQ | 13.5500 | 144.8330 | 111      | 1986 99 99 99 1 | USING SONDE MODEL  | I1 VIZ UNSPECIFIED                             | UK Met. O. (pers. comm.) Derived from D MET O                                    | 1/6/1/15 /1996                                    |
| 91212 91217 GUAM/TAGUAC GQ | 13.5500 | 144.8330 | 111      | 1988 10 01 99 0 | CHANGE SONDE MODEL | VIZ UNSPECIFIED to VIZ B 1492-520 NWS 1680 MHZ | Hammer (pers. comm.)   | 12/2004   |
| 91212 91217 GUAM           | GQ      | 13.5500  | 144.8300 | 111             | 1995 11 01 99 0    | CHANGE SONDE MODEL                             | VIZ B 1492-520 NWS 1680 MHZ to VIZ MK II SERIES MICROSONDE UNSPECIFIED           | Hammer (pers. comm.) with rod temp sensor 12/2004 |
| 91212 91217 GUAM           | GQ      | 13.5500  | 144.8300 | 111             | 1997 09 99 99 0    | CHANGE SONDE MODEL                             | VIZ MK II SERIES MICROSONDE UNSPECIFIED to VIZ/SIPPICAN B2 1492-540 NWS 1680 MHZ | Hammer (pers. comm.) 12/2004                      |
| 91212 91212 GUAM           | GQ      | 13.4833  | 144.8000 | 75              | 2000 04 10 99 0    | CHANGE ID NUMBER                               | Updated by NCAR/EOL  | STATION MOVED 06/2010                             |
| 91212 91212 GUAM           | GQ      | 13.4833  | 144.8000 | 75              |                    |  |  |   |

**Table 7. Guam Station History**